IMPORTANCE OF SITE

Most people would not attempt to raise brook trout in the ocean, but a few might try planting peach trees on a south-facing lower slope or black walnut in strongly acidic soil. Trees and shrubs, like any other living organism, have environmental requirements and "preferences" that must be respected. Before designing your urban orchard it is important that you visit the site and take careful note of the growing conditions it affords. Look at the lay of the land, observing how level or hilly it is and in which direction any slopes face. Measure its area. Check the depth and drainage of the soil, see how compacted it is or how rich in organic matter, feel for its texture, and if possible have a soil test made at least for acidity. Note the amount and direction of sunlight the area receives throughout the day. Be aware how windy or humid the atmosphere is relative to nearby areas, and look for possible sources of salt and other pollutants. Record anything possible about the present vegetation on and adjacent to the site. All of this information will help determine the best candidates for your plantings; some of the more important site factors are described below in greater detail:

SUNLIGHT

All green plants require light to grow--and usually even more to flower and set fruit--but some species require more sun than others. In the city, particularly where buildings are tall, it can be especially difficult to find sites receiving adequate light. If your site is partly shaded for much of the day by structures or existing vegetation, you might consider planting JUNEBERRY, ELDERBERRIES, HIGH-BUSH CRANBERRIES, or APRICOTS, all of which have some shade tolerance. You should not try PERSIMMON, GRAPES, HIGHBUSH BLUEBERRY, or RUGOSA ROSE, which need full sun. Somewhere in between, but still producing best with good sunlight, are BRAMBLES, MULBERRY, PEACH, QUINCE, CHINESE CHESTNUT, and BLACK WALNUT. If your site is partly shaded at noon but gets direct sunlight early and late in the day, GROSELLES are likely to grow well.

SLOPE

Extremes of temperature can harm many tree crops, but favorable sites can help provide protection. Slopes are usually preferable to hollows, which can become "frost pockets"; but south and west slopes are not advisable for many of the less-hardy varieties, particularly if these are early bloomers. This is because the sunny south and west faces heat up so early in the spring that the spring-flowering trees planted on them tend to bloom too soon, before the danger of a snap frost has passed. The frost will kill flowers that have already bloomed, while the still unopened flower buds of trees on the cold northeast slopes remain protected. Trees on south-facing slopes also suffer the greatest daily extremes of temperature and are subjected to alternate freezing and thawing in early spring. Usually more soil moisture is available lower down a slope than near the top, and northeast slopes tend to be less dry than south and west ones.

City dewllers rarely have access to a large enough area that they can choose a particular orientation for their site; instead, it is necessary to select species or varieties suitable for whatever land is available. If your

Gardens where these vegetables are grown, and especially where the disease has appeared, are not promising sites for these fruit-bearing plants unless resistant varieties are used. Roots of BLACK WALNUT produce secretions that are harmful to many other plants, so this tree is best avoided near gardens and landscape plantings.

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The roots of different trees and shrubs extend downward different amounts, so the soil depth above hard layers or obstructions is important in providing proper anchorage and moisture for the various species. City lots are likely to be underlain at little depth with structures that block root penetration; for such cases the shallow-rooted QUINCE, JAPANESE PLUM, or HIGHBUSH BLUEBERRY are possible selections. Trees requiring deep soils include PEAR, APRICOT, EUROPEAN PLUM, BLACK WALNUT, ENGLISH WALNUT, and HAZLENUT.

SOIL NUTRITION, ETC.

Most woody food plants bear best when grown on fertile soil, and normally it is helpful to provide soil amendments if the soil is poor (see section on maintenance). RUGOSA ROSE is one of the plants most tolerant of depleted soils, although it too produces more when fertilized. Nutrient tests can be performed on soils by most County Extension Service offices, and the fertility of most sites, even notoriously poor urban ones, can usually be improved.

Ample organic matter in the soil--which helps the soil retain moisture and nutirents as well as improving its structure, among other things--is desirable for most plants. It is also one of the constituents likely to be deficient in urban soils. GRAPE vines can be grown better than most fruit bearing species in soil with low organic matter. PEACH, PLUM, BRAMBLES, GROSELLES, CHINESE CHESTNUT, and ENGLISH WALNUT, among others, prefer a good amount of organic matter. HIGHBUSH BLUEBERRY requires plentiful organic matter to prosper. Finished compost, leaf mold, and peat moss are examples of organic materials that might be incorporated into a city soil to raise its organic content.

Soil "pH" or acidity is a chemical factor that has a sizeable influence on plant nutrition. Most County Extension offices can perform an accurate pH test on a soil sample; kits are also available in garden supply stores that will give a reasonable result. The test result is expressed on a scale between 0 (very acidic) and 14 (very alkaline), but most soil values fall well into the middle of the scale. Soil pH can be raised if too low by adding the proper amount of agricultural lime, and in the rare cases of excessive alkalinity the pH can be lowered by addition of sulfur; however, since these treatments normally must be repeated at intervals of a few years, it simplifies matters to match species to soils of their preferred pH. The pH preferences of most species are cited numerically elsewhere in the text. HIGHBUSH BLUEBERRY withstands the lowest pH of any of these species; JUNEBERRY and RUGOSA ROSE can also grow in rather acidic soils; on the alkaline end of the scale BLACK WALNUT, PEACH, CHERRY, ELDERBERRY, GRAPE, and most PLUMS are good selections.

Pollution is an important factor to consider in urban plantings. Some plants, including most PLUM varieties, are sensitive to pollution and not recommended for congested areas. MULBERRY, JUNEBERRY, PERSIMMON, and HIGHBUSH "CRANBERRY" are reputed tolerant of "urban conditions," including pollution. RUGOSA ROSE, BEACH PLUM, MULBERRY, JUNEBERRY, and ELDERBERRY tolerate soils of high salt content, which enables them to be grown near roads and sidewalks that are salted in winter.

A few species are best planted away from gardens. APRICOT and BRAMBLES (and to a lesser extent PLUM and PEACH) are susceptible to a fungal disease called "verticillium wilt," which also attacks tomato, potato, and other vegetables.

site slopes southward, it is best to select late bloomers like EUROPEAN PLUM, CHERRY PLUM, or GRAPES. North and east slopes admit a much wider variety of crops, including PEACH, PEAR, CHERRY, JAPANESE PLUM, APRICOT, APPLE, GROSELLES, BRAMBLES, HAZLENUT, CHINESE CHESTNUT, and ENGLISH WALNUT. In a larger urban area the extremes of winter are tempered by the city's heating, so that the factor of slope becomes much less important.

WIND

Exposure of a site to air movement is important since either extreme can be harmful to certain plants. APPLE and BRAMBLES, for example, are sensitive to high wind and should not be planted on exposed, windy sites. MULBERRIES, PERSIMMON, HIGHBUSH "CRANBERRY," BEACH PLUM, and BLACK WALNUT are more tolerant of wind. Plants like PEAR, GRAPE, GROSELLES, and RUGOSA ROSE require a certain amount of air circulation to avoid excessive humidity, which favcors some diseases. Air circulation can also prevent a low site from acting as a frost pocket and can thus protect sensitive trees like APRICOT. Cities tend to have erratic patterns of air circulation; this makes it advisable to visit a prospective site in as many different weather conditions as possible. However, excessive wind, like extreme cold, tends not to be a problem in urban areas.

SOIL TEXTURE, DRAINAGE, ETC.

Physical properties of the soil affect plants in many ways, the main ones perhaps being their effects on water and nutrient availability and ease of root penetration. Soils are composed largely of mineral particles of different sizes: the largest particles are called "sand," the smallest "clay," and the intermediate size "silt." The balance of these particle sizes present in a soil is referred to as its "texture," which ranges from sandy ("coarse" textured or "light" soils) to clayey ("fine" textured or "heavy" ones). City soils can fall almost anywhere in the range, especially since in construction various fill soils and dredge spoils often replace part or all of the original soil profile. An experienced person can judge a soil's texture reasonably well by its feel, although there are more precise tests; your County Extension Service or an office of the Soil Conservation Service should be able to help in this determination. If your soil is sandy, you should be able to grow PEACH, MULBERRY, CHERRY, GRAPE, BEACH PLUM, CHERRY-PLUM, CHINESE CHESTNUT, or ENGLISH WALNUT. HIGHBUSH BLUEBERRY and APPLE also tend to prefer less heavy soils. On the heavier clay soils, APRICOT, GROSELLES, and EUROPEAN PLUM are some of the better candidates.

"Drainage" refers to the amounts of time a soil is not saturated and thus has air available to plant roots. Sandy soils and upper slopes tend to have good drainage (stay unsaturated), while clay soils in hollows are likely to be the poorest drained. Compacted soils, like many of those found in cities, can also drain poorly. Most plants thrive on a "well-drained" soil, one with enough moisture but plenty of aeration also; this includes most of the fruit- and nut-bearing trees and shrubs indluded here. A few species, such as HIGHBUSH BLUEBERRY, ELDERBERRY, JUNEBERRY, HIGHBUSH "CRANBERRY," and GROSELLES tolerate wet spots, but even these will not stand flooding for any length of time. At the other extreme are the drought-resistant species such as MULBERRY, PERSIMMON, BUSH CHERRY, and particularly BEACH PLUM, RUGOSA ROSE, and CHERRY-PLUM, which are the best choices to plant where rainfall is limited and artificial watering is difficult.